REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 16 has been cancelled.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 9-13, 15, 17-19, and 21-25 are now pending in this application.

Rejections under 35 U.S.C. § 103

Claims 9-13, 15, 16, 18, 19, and 21-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,068,813 (hereafter "Semel") in view of U.S. Patent No. 6,344,169 (hereafter "Tsuchida et al."). This rejection is respectfully traversed.

Amended 9 recites a sintered body produced by preparing a metal powder mixture, lubricating a die with a die lubricant, compressing the metal powder mixture in the lubricated die to form a green compact and sintering the green compact and having a sintered structure of sintered metal particles, wherein the sintered metal particles have a maximum particle size of 100 μm or smaller, the metal powder mixture consisting essentially of: a metal powder that is a blend of an iron-based powder and an alloying metal powder screened to a particle size of 75 μm or smaller, a graphite powder in an amount of 0.1 to 0.3% by mass, and a powder lubricant in an amount of 0.2 to 0.80 % by mass based on a total mass of the metal powder mixture. Claims 10-12 and 23 depend upon claim 9.

Amended 13 recites a production method of a sintered body, comprising preparing a metal powder mixture, the metal powder mixture consisting essentially of a fine metal powder, a graphite powder in an amount of 0.1 to 0.3 % by mass and a powder lubricant in an

amount of 0.2 to 0.80 % by mass based on a total mass of the metal powder mixture, the fine metal powder being a blend of an iron-based powder and an alloying metal powder, wherein the fine metal power is screened to a particle size of 75 μm or smaller; applying a die lubricant to a die; after said applying, compressing the metal powder mixture into the die to provide a green compact; and sintering the green compact, wherein the sintered body has a sintered structure of sintered metal particles of 100 μm or smaller in maximum particle size. Claims 15, 18, 19, 21, and 22 depend upon claim 13.

Semel discloses a method of making powder metallurgical compositions in which a prealloyed powder containing iron and at least one alloying additive is mixed with a copper containing powder having a weight average particle size of about 60 microns or less and a nickel containing powder having a weight average particle size of about 20 microns or less. See Semel at col. 3, lines 28-45. Semel discloses that graphite powder can be mixed with the powder in an amount of about 0.1 weight percent to about 1.2 weight percent. See Semel at col. 10, lines 21-30. Lubricants can also be added in an amount of up to about 2 weight percent. See Semel at col. 10, lines 38-63. Semel discloses that the powder composition can be compacted and sintered. See Semel at col. 14, lines 45-54.

However, Semel does not disclose or suggest a sintered body made with a metal powder mixture consisting essentially of "a metal powder that is a blend of an iron-based powder and an alloying metal powder screened to a particle size of 75 μm or smaller," as recited by claim 9. Nor does Semel disclose or suggest a production method of a sintered body, comprising preparing a metal powder mixture, "the fine metal powder being a blend of an iron-based powder and an alloying metal powder, wherein the fine metal power is screened to a particle size of 75 μm or smaller," as recited by claim 13.

Semel discloses that the iron containing prealloy powder has a maximum particle size of about 250 microns and a weight average particle size that is preferably less than about 100 microns, more preferably from about 65 microns to about 100 microns, and most preferably from about 60 microns to about 75 microns. See Semel at col. 7, lines 34-42. However, Semel's teaching regards the weight <u>average</u> size for iron containing particles, not the size of all iron containing powder particles. In other words, Semel discloses that an <u>average value</u>

for a distribution of sizes for iron containing powder would fall within the disclosed size ranges. Semel does not disclose that the entire distribution of iron particle sizes would fall within these ranges. Therefore, one of ordinary skill in the art would understand that Semel teaches that the average particle size for the iron containing powder would fall within the ranges disclosed by Semel, not that all iron containing powder particles have been screened to the sizes disclosed by Semel.

The examples disclosed by Semel, which include a particle size analysis of iron-molybdenum prealloy powder, further demonstrate that Semel does not disclose or suggest "a metal powder that is a blend of an iron-based powder and an alloying metal powder screened to a particle size of 75 μm or smaller." Semel discloses that the particle size of iron-molybdenum prealloy powder was analyzed by screening the powder with screens having different opening sizes. See Semel at col. 16, lines 18-46. The screen analysis showed that only 62.9 weight percent of the iron-molybdenum prealloy powder had a size less than 75 microns because 28.6 weight percent of the powder sifted to the pan, 20.6 weight percent remained on a screen with an opening size of 45 microns, and 13.7 weight percent remained on a screen with an opening size of 63 microns. See Semel at col. 16, lines 18-46. Therefore, 37.1 weight percent of the iron-molybdenum prealloy powder had a particle size greater than 75 microns, as shown by the screen analysis disclosed by Semel. See Semel at col. 16, lines 18-46. Semel discloses that the iron-molybdenum prealloy powder was mixed with copper containing powder, nickel containing powder, graphite, and lubricant for further use. See Semel at col. 16, lines 2-46. Therefore, because Semel discloses that the iron containing powder includes particles having a particle size greater than 75 microns, Semel does not disclose or suggest an iron-based powder that as been screened to a particle size of 75 μm or smaller.

Furthermore, Semel fails to disclose or suggest a sintered body having a sintered structure of sintered metal particles, "wherein the sintered metal particles have a maximum particle size of 100 μm or smaller." Nor does Semel disclose or suggest a production method of a sintered body, comprising preparing a metal powder mixture, compressing the metal powder mixture into the die to provide a green compact, and sintering the green compact,

"wherein the sintered body has a sintered structure of sintered metal particles of 100 μm or smaller in maximum particle size."

The Office asserts that the sintered body produced by the combination of Semel and Tsuchida et al. would inherently have a maximum sintered particle size of 100 microns or smaller. See Office Action at pages 2-3. However, as discussed above, Semel discloses an iron containing powder that includes particles with a size greater than 100 microns. Semel only discloses a weight average particle size that is less than 100 microns, not that all iron containing powder particles are less than 100 microns in size. As shown in the table in column 16 of Semel, 17.7 weight percent of the iron-molybdenum prealloy powder disclosed by Semel has a particle size greater than 106 microns. Therefore, a sintered body produced with the iron-molybdenum prealloy powder disclosed by Semel would not have a maximum particle size of 100 microns or smaller.

Tsuchida et al. discloses a method for compaction of powders for powder metallurgy in which lubricant is applied onto inner wall surfaces of a compaction die. See Tsuchida et al. at col. 2, lines 46-55. However, Tsuchida et al. does not disclose or suggest a sintered body or method with an iron-based powder that has been screened to a particle size of 75 μm or smaller. Nor does Tsuchida et al. disclose or suggest a sintered body or production method of a sintered body in which the sintered body "wherein the sintered metal particles have a maximum particle size of 100 μm or smaller."

It would not have been obvious to one of ordinary skill in the art to have combined the teachings of Semel and Tsuchida et al. to provide the sintered body and method of claims 9 and 13. A basic requirement of a *prima facie* case of obviousness is that a prior art reference, or prior art references when combined, must teach or suggest all of the claim limitations. See M.P.E.P. §§ 2143, 2143.03. Semel and Tsuchida et al., alone or in combination, fail to disclose or suggest all of the features of claims 9 and 13 because Semel and Tsuchida et al. fail to disclose or suggest an iron-based powder screened to a particle size of 75 μm or smaller. Nor does the combination of Semel and Tsuchida et al. disclose or suggest a sintered body with a maximum particle size of 100 μm or smaller. Therefore, it would not have been obvious to combine Semel and Tsuchida et al. to provide the sintered body and method of

claims 9 and 13. Nor would one of ordinary skill in the art have had a motivation to make such a modification.

For at least the reasons discussed above, withdrawal of this rejection is respectfully requested.

Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Semel and Tsuchida et al. as applied to claim 13, and further in view of U.S. Patent No. 6,120,575 (hereafter "Arvidsson et al."). This rejection is respectfully traversed. Arvidsson et al. fails to remedy the deficiencies of Semel and Tsuchida et al. discussed above in regard to independent claim 13, from which claim 17 depends. Withdrawal of this rejection is respectfully requested.

Claims 11, 12, 24, and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Semel and Tsuchida et al. as applied to claims 9 and 13, and further in view of U.S. Patent No. 6,332,904 (hereafter "Fujiki et al."). This rejection is respectfully traversed. Fujiki et al. fails to remedy the deficiencies of Semel and Tsuchida et al. discussed above in regard to independent claims 9 and 13, from which claims 11, 12, 24, and 25 depend. Withdrawal of this rejection is respectfully requested.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for

such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date JAN 11 2007

By _____

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5414
Facsimile: (202) 672-5399

Richard L. Schwaab
Attorney for Applicant
Registration No. 25,479